

ABSTRACT

A method and system providing formulae that express integrals of quadratic homogeneous polynomials on polygons and polyhedra, such as entries of the moment of inertia tensor, in
5 terms of vertex coordinates. The formulae for a triangle provide the mass properties without integration, and can be combined (using a signed sum) to determine the mass properties for any polygon. Likewise, the concept extends to a polyhedron, which may be built from a plurality of signed
10 pyramids. An algorithm combines the formulae to determine the mass properties of a polyhedron. The formulae and algorithm may be used in a graphics processing environment.